

Additional file 14: Positive Control Cell Type Markers

Five positive control genes were chosen for each of the neuron subtypes and intestinal epithelial subtypes, 4 for NG2 Glia, and 10 for every other cell type. These control genes were selected without referring to our results, and whenever possible were chosen from existing lists of cell type markers

Cell Type	Positive Control Genes**	Reference(s)
GABAergic Neurons	GAD2, SLC32A1, SLC6A1, DLX1, DLX2	[8]
Noradrenergic Neurons	DBH, TH, ADRA2A, CYB561, MAOA	[18]
Serotonergic Neurons	TPH2, SLC6A4, DDC, SLC18A2, HTR1B	[22]
NG2 Glia	CSPG4, OLIG1, OLIG2, SOX10	[23]
Neurons	SNAP25, STMN2, ENO2, SYN1, TUBB3	[24]
Astrocytes	SLC1A2, SLC1A3, GFAP, GJB6, FGFR3, AQP4	[24, 25]
Oligodendrocytes (Myelinating)	PLP1, MOBP, SOX10, MAG, MBP	[24, 25]
Microglia	CSF1R, CX3CR1, AIF1, FCGR1A, TREM2	[26]
Adipocytes	ADIPOQ, PLIN, ACSL1, CEBPA, CFD, FASN, GPD1, LIPE, LPL, PPARG	[1, 2]
B Cells	MS4A1, CD79B, CD79A, CD22, CD40, CR2, FCER2, IGHM, PAX5, TNFRSF13B	[3]
Cardiomyocytes	TNNT2, MYL7, ACTC1, CSRP3, MYBPC3, MYH6, MYH7, MYL2, MYL4, NKX2-5	[4]
Chondrocytes	COMP, MATN1, COL2A1, COL9A1, COL9A2, CHI3L1, SOX9, MATN3, CHAD, SOX6	[5]
Endothelial Cells	FLT1, TIE1, CDH5, EDN1, ENG, KDR, MMRN2, PECAM1, SELE, VWF	[6]
Erythrocytes	GYPA, RHAG, GYPB, GYPC, GYPE, HBA1, HBA2, HBB, RHCE, RHD	adult hemoglobin, glycophorins, Rh blood group antigens, and erythropoietin receptor
Macrophages	EMR1, CD14, CSF1R, ITGAM, CD68, ITGAX, CD33, FCGR1A, FCGR1B, FCGR2A	[7]
NK Cells	KLRD1, KIR2DL1, KLRB1, KLRK1, KIR3DL1, NCAM1, CD244, GZMB, GNLY, PRF1	[3]
Osteoblasts	BGLAP, SP7, ALPL, COL1A1, DLX5, DMP1, MEPE, OMD, RUNX2, SPP1	[5]
Platelets	ITGA2B, GP9, GP1BA, ITGB3, SELP, GP5, MPL, GP6, GP1BB, TBXA2R	[3, 5] plus TBXA2R
Pluripotent Stem Cells	POU5F1, ZFP42, SOX2, LIN28A, LIN28B, ZIC3, UTF1, FBXO15, LEFTY1, LEFTY2	[5]
Schwann Cells (Myelinating)	PLP1, PRX, EGR2, MAL, MBP, NGFR, S100B, SOX10, PLP1, PMP2, PMP22	[9, 10]

Simple Epithelial Cells	KRT7, KRT18 , AP1M2, CDH1, CGN, DSG2, EPCAM, KRT19, OCLN, TJP3	[11, 12] plus AP1M2 and EPCAM
Skeletal Muscle Cells	TNNI1, TNNI2 , ACTA1, CHRNA1, ENO3, MYBPH, MYF6, MYL1, MYLPP, TNNC1	[4]
Smooth Muscle Cells	ACTA2, TAGLN, DES , ACTG2, CNN1, CSRP1, LMOD1, LPP, SMTN, VCL	[4]
Stratified Epithelial Cells	KRT14, KRT15 , DSC1, DSC3, DSG1, DSG3, KRT6A, KRT16, KRT17, PKP1	[11, 12]
T Cells	CD3G, TRA@ , CD3E, CD4, CD8A, CD8B, CD28, CD247, TRAC, TRBC1	TCR locus and major TCR co-receptors
Enterocytes	FABP2, SI , APOA1, DPP4, ANPEP	[13, 14]
Enteroendocrine Cells	GCG, PYY, SST, SYP, TPH1	[15]
Goblet Cells	TFF3, MUC5B , CLCA1, FCGBP, AGR2	[16, 17]
Paneth Cells	DEFA6, REG3A , LYZ, REG1A, REG1B	[19, 20]
Podocytes	PTPRO, NPHS1, NPHS2, PODXL, WT1, MME, TJP1, TCF21, CR1	[21]

** Genes in bold were used as negative control markers for non-target cell types in Figure 3. Negative control genes also included the set of reference genes from Eisenberg and Levanon [30]. *KLRD1* and *KIR2DL1* were not included as negative controls for T cells because they are expressed in T cells, *DES* was not included as a negative control for any muscle cell type as it is expressed in all muscle, and *EMR1* and *CD14* were not included as negative controls for microglia because they are expressed in microglia. In addition, bold genes for the neuron subtypes and intestinal epithelial lineages were only included as negative controls for other cell types in the same class (i.e. the GABAergic marker *GAD2* was used as a negative control for the other 3 neural subtypes but not any other cell type).

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